QUALITY MANAGEMENT SYSTEM

PROJECT WORK DONE AT

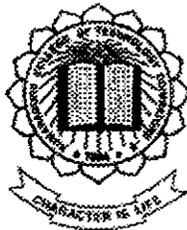**SIFY Ltd., CHENNAI**

PROJECT REPORT

SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS
FOR THE AWARD OF THE DEGREE OF
MASTER OF COMPUTER APPLICATIONS
OF BHARATHIAR UNIVERSITY, COIMBATORE.

SUBMITTED BY

PRAVEEN P.V.
0038M1050

GUIDED BY

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Kumaraguru College of Technology
Coimbatore – 641006
April 2003.

Department of Computer Science and Engineering

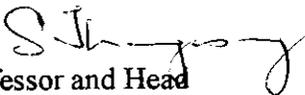**KUMARAGURU COLLEGE OF TECHNOLOGY**

COIMBATORE – 641 006.

CERTIFICATE

This is to certify that the project work titled

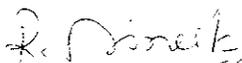**QUALITY MANAGEMENT SYSTEM**

Done by

PRAVEEN P.V.

0038M1050

Submitted in partial fulfillment of the requirements for the award of the degree of

Master of Computer Applications of Bharathiar University.

Professor and Head

Internal Guide

Submitted to University Examination held on 16-04-2003.

Internal Examiner
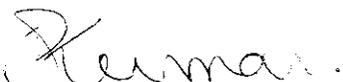
External Examiner

Bonafide Certificate

This is to certify that Mr. Praveen.P.V, MCA student of Kumaraguru College, Coimbatore, has completed the project titled

"Quality Management System" for our Application Department at Chennai.

The project work was done from 13th of Dec 2002 till 30^{h} of March 2003.

The project has been completed successfully.

Project Guide:

K Bhaskar   27/03/03
(Technical Manager)

DECLARATION
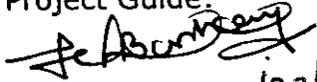
I hereby declare that the project entitled 'QUALITY MANAGEMENT SYSTEM' for SIFY Ltd., Chennai, submitted to **Kumaraguru College of Technology, Coimbatore**, affiliated to **Bharathiar University** as the project work of **Master of Computer Applications Degree**, is a record of original work done by me under the supervision and guidance of **Mr. Bhaskar K** (Technical Manager, SIFY Ltd.) and **Mr. Dinesh R** MS (Computer Science, USA) Asst. Professor and this project work has not found the basis for the award of any Degree/Diploma/Associateship/Fellowship or similar title to any candidate of any university.

Place: Coimbatore

Signature of candidate

[signature]

(PRAVEEN P V)

Date : 16 - 04 - 03
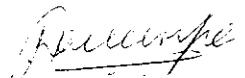
ACKNOWLEDGMENT

First and foremost I thank GOD, the almighty for all the bliss he has given me.

I express my sincere thanks to **Prof. Dr. S. THANGASAMY, B.E (Hon's), Ph.D.,** Head of Department of Computer Science and Engineering for making all necessary arrangements for the successful completion of the project.

I owe a great deal to the course coordinator **Mr. A. Muthukumar, MCA,** Asst Professor Department of Computer Science and Engineering, and my internal project guide **Mr. R Dinesh** MS (Computer Science, USA), Asst Professor, Department of Computer Science and Engineering for their motivation, constant encouragement and priceless suggestions in every step of this project.

With profound gratitude, I sincerely thank **Mr. Rustom Irani** (CTO, SIFY Ltd., Chennai) for allowing me to do the project work at his renowned organization. My sincere gratitude and thanks to **Mr. Sreenivasan S** (Project leader, SIFYHDE, SIFY Ltd), and **Miss. Samuel Gunasundari** (Senior Application Support Engineer, SIFYASE, SIFY Ltd) for their constant help and valuable guidance throughout the project work.

Few words cannot express my heartfelt thanks to external guide **Mr. Bhaskar K** (Technical Manager, SIFY Ltd). He taught me the concepts behind the project in detail, clearing all doubts in spite of his busy schedules and responsibilities. To you sir, I owe my deepest gratitude.

I articulate my earnest thanks and gratitude to my parents, friends and well wishers who have understood me and motivated me throughout this project.

PRAVEEN P V

SYNOPSIS

In such a competitive world, quality assurance has become inevitable in any industry. To get the competitive edge over their peers every organization tries to make their operations perfect and project it to their customers as the best around. For this these organizations needs certifications from independent bodies, proving their abilities beyond doubt. Certification is given for a period of time after through auditing of the procedures and functions carried out in the organization.

There are many organizations which carry out the process of accessing the quality of the procedures carried out in the organization. DNV is one such organization which has certified SIFY Ltd.   The company's network services, data center operations and customer relationship management are accredited ISO 9001:2000. The certification process is a continuous process and auditing is carried out in a half yearly basis. The organization is bound to satisfy the rules and regulations put forward by the certifying organization on all the audits.

According to the ISO Standards there are certain procedures and rules to be followed for each and every process in the organization. The existing system is not fully automated and therefore more time consuming. The proposed system will reduce the workload of the employees by helping them to generate routine documents and reports on the fly. It will help manage, document and keep track of the record of all the events or process that is to be carried out in the organization.

A quality is a characteristic. A system is a set of interrelated processes, and a requirement is an obligation. Therefore, a quality system requirement is a characteristic that a process must have. Quality audits examine the elements of a quality management system in order to evaluate how well these elements comply with quality system requirements.

A quality management system is a web of interconnected processes. Each process uses resources to turn inputs into outputs. And all of these processes are interconnected by means of many input-output relationships. Every process generates at least one output, and this output becomes an input for another process. These input-output relationships glue all of these processes together - that's what makes it a system. It is intended to automate and manage the quality of the product and the procedures in the company.

The system to be developed is to provide the users in the organization with a user friendly environment where he/she can log in and view/add/modify/deactivate a procedure or document defining a procedure. It should also help the user to view all the approved documents for a particular group to which he belongs. It should also provide measures to improve the performance of the associates.

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1. *Introduction*

Sify

Sify
Making the Internet work for you

Sify is India's pioneer in Internet and e-Commerce and offers integrated end-to-end solutions with a comprehensive range of products and services, for both the Business to Consumer (B2C) and Business to Business (B2B) segments, which cover the four critical cornerstones of the Net: Connectivity, Content, Commerce and Community.

The mission is *"Making the Internet work for you."*

It is enabled through the products, services and technology that Sify offers. And in the comprehensive suite of Business to Consumer and Business-to-Business ECommerce solutions and expertise, Sify provides in association with global leaders.

The cutting edge B2B services including connectivity solutions like Electronic Data Interface, Virtual Private Networks, Security Services, Network Management Services as well as eSolutions services that include Internet Consulting, Solutions Architectures, Design and Development of Solutions, Hosting and Management Services and eCommerce products, are relied upon by leading Corporate in India. Sify delighted customers with innovative B2C solutions like SatyamOnline, the instant Internet access package and www.sify.com, one of India's most popular portals.

At Sify, it has a host of firsts to its credit. As early as 1995, when the concept of eCommerce was not fully understood, Sify was already making substantial headway in Electronic and Internet commerce.

It established the first private TCP/IP public data network between all the major cities in the country. This revolutionized business computing in India,

with its interconnectivity between multi-location offices, flexibility of platforms, applications software, and smooth transfer of data. It was Sify's, the first frame relay service, the first ATM backbone, the first public data network with 2Mbps backbone, and the first authorized Notes public network.

It was the first private ISP to operate when the ISP policy was announced in 1998, pioneering this category of service with a customer focus that has made it a qualitative leader in Internet access services. It was also the first to offer Internet telephony in April 2002 after the change in policy allowing it.

Sify has the distinction of being the first Indian Internet Company to be listed on the NASDAQ. The company's network services, data center operations and customer relationship management are accredited ISO 9001:2000

1.2 ISO 9001:2000 Standard

The requirements of the ISO 9001:2000 standard are organized into the following five sections

- Quality Management System
- Management Responsibility
- Resource Management
- Product Realization
- Measurement, analysis and improvement

All the above should be followed in an organization to meet the certification requirements. Let us look into these in greater detail.

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General Requirements

The Quality Management System (QMS) is the collection of processes, documents, resources, and monitoring systems that direct the work of an organization regarding product and service quality. The organization needs to establish, document, carry out, and maintain this system to meet the requirements of ISO 9001:2000.

Documentation requirements

General: - The organization needs to document – either electronically or on paper – the quality policy, quality objectives, and quality manual. Written procedure plans, and operations need to describe how product and service quality is attained. Certain records, providing evidence of activities that were carried out (i.e. purchase orders, sales contracts, inspection records, design review notes, etc.), have to be retained. The quantity, detail, and form of the documentation can differ from one organization to another depending on size, type of activities, or complexity of processes.

Quality manual: - The quality manual describes the extent of the QMS and may exclude certain sections of the Standard that don't pertain to the organization. All of the quality procedures are either included in the quality manual or are referenced by it. The interaction between processes making up the QMS is also described.

Control of documents

All of the documents in your QMS must be legible, identified, reviewed, authorized, up-to-date, issued, distributed, and periodically updated. Obsolete

documents have to be identified and protected from unintended use. Documents that come from outside the organization also have to be identified and controlled.

Control of records

Certain records need to be kept to demonstrate how the QMS is operating. These records must be legible, and easy to identify and retrieve. A written procedure must describe how they are identified, stored, protected, retrievable, and define their retention and disposal times.

1.2.2 Management Responsibility

Management commitment

The Standard recognizes that an effective quality program requires the involvement and commitment of the organization's top management. Therefore, the Standard assigns top management the following responsibilities:

- Overseeing the creation of the Quality Management System (QMS),
- Communicating the importance of meeting requirements, including customer, legal, and regulatory requirements,
- Establishing the quality policy and the quality objectives,
- Communicating with parties responsible for product and service quality,
- Providing adequate resources for the operation of the QMS
- Reviewing the operation of the QMS.

Customer focus

Top management must ensure that customer requirements are understood and met with the goal of improving customer satisfaction.

Quality policy

The quality policy identifies the main goals of the QMS. The quality policy must be:

- Appropriate to the organization's purpose,
- Include a commitment to meet customer, legal and regulatory requirements,
- Create a background for establishing quality objectives,
- Communicated throughout the organization,
- Reviewed for ongoing suitability to the needs of the organization and its customers

Planning

Quality objectives: - Establish measurable quality objectives that support the quality policy and communicate them throughout the organization.

QMS planning: - Plan the QMS so that the quality objectives are met and so the system continues to work as it is changed to incorporate improvements.

Responsibility, authority and communication

Responsibility and authority: - Effective work depends on a clear understanding of each person's responsibility and authority. Therefore responsibility and authority must be defined and communicated.

Management representative: - Top management must appoint a manager to have ongoing operational responsibility for the QMS. This person is referred to as the Management Representative. The duties of the Management Representative include:

- Ensuring that processes needed for the QMS are established, implemented, and maintained,

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- Reporting on the performance of the QMS and any improvements needed,
- Promoting awareness of customer requirements throughout the organization

Internal communication:-Top management needs to set up an effective system of communication to ensure effective operation of the QMS.

Management review

General:-Top management is required to regularly review certain aspects of the QMS to make sure that the goals are being achieved and to look for ways to improve the QMS. The review must cover suitability, adequacy, and effectiveness of the QMS. The review also includes assessing opportunities for improvement and needed changes to the QMS, quality policy, and quality objectives. Records of these reviews must be kept.

Review input:-These meetings must address the following areas:
- Internal audit results,
- Customer feedback,
- How well processes have been working,
- How well products have been meeting requirements,
- Status of previously identified problems,
- Items identified for follow-up in previous management reviews,
- Planned process or product changes that could affect quality,
- Recommendations for improvement generated through the operation of the QMS

Review output:-These reviews result in decisions and actions related to:
- improving the QMS, and
- improving the product,
- The need for additional resources, including human resources.

1.2.3 Resource management

Provision of resources

Provide the people, equipment, tools, and materials need to:

- build and maintain the QMS,
- continually improve the effectiveness of the QMS, and to
- meet customer requirements

Human resources

General: - People performing work affecting product and service quality must be competent to carry out that work. This competency is attained through a combination of education, training, skills, and experience.

Competence, awareness and training: - The organization must:

- Identify the talents, skills, knowledge, and capabilities each person needs to carry out their assigned responsibilities,
- Train or otherwise assist people to meet these identified competencies,
- Assess the competency of each person to carry out their responsibilities,
- Make sure each person understand how their work contributes to the quality of products and services and to meeting quality objectives.
- Keep records of each person's education, training, skills, and experience.

Infrastructure

The infrastructure for a QMS includes the building, workspace, equipment, and the supporting services involved in creating the organization's products or services. The organization will need to determine, provide and maintain the infrastructure needed to achieve the planned results.

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Work environment

The work environment of the organization must not interfere with the ability of employees to perform effectively in order to meet quality requirements.

1.2.4 Product Realization Requirements

Planning of product realization

Product realization is the term used to describe the work that the organization goes through to develop, manufacture, and deliver the finished goods or services. An effective Quality Management System (QMS) includes a comprehensive approach to getting from the product concept to the finished product. This approach, sometimes called a quality plan, includes the following:

- product requirements and quality objectives ,
- creation of the processes, documents, and resources needed for product realization,
- required verification, monitoring, inspection, and test activities,
- The records to be kept.

Customer-related processes

Determination of requirements related to the product: - The Standard requires the organization to determine product requirements. These requirements can come from the customer, may be mandated by laws or regulations, and include generally accepted standards within your industry or market. Requirements are established by standard contracts or oral agreements that the sales department uses in discussions with customers, and other sources.

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Review of requirements related to the product:-After gathering preliminary product requirements, these requirements need to be reviewed to be sure that the customer understands them and that the organization is meeting these requirements. This review must ensure:

- The requirements are known and understood,
- Any changes from the original contract or discussions is understood,
- The organization has the ability to meet the requirements
- Records are kept of this review.

Routine orders for items described in a catalog of products are considered reviewed when the relevant product information is reviewed.

Customer communication:-Put in place effective customer communications channels, to allow dialogue regarding:

- product information,
- questions about contracts, order handling, changes, and
- Receiving customer feedback, including complaints.

Customer property:-Special care must be taken when a customer provides their property for use or incorporation into the product. Identify, verify, and protect customer property provided and maintain of lost, damaged or unsuitable customer property. This may include intellectual property

1.2.5 Measurement, analysis and improvement requirements

General

Plan and carry out the inspection, test, measurement, analysis, and improvement activities needed to:

- assure product meets product requirements,
- assure the QMS works as planned,
- improve the operation and results from the QMS

Customer satisfaction

Monitor the end customers' opinion of your product and service. Determine how to gather and use this information

Internal audit:-Internal audits are verification activities performed by trained auditors within the organization. Their purpose is to determine how well the plans making up the QMS are being followed. The Standard requires internal audits be carried out regularly in each area covered by the QMS. Audits address conformity with the QMS, the requirements of ISO 9001:2000, and the effectiveness of the implementation.

Audit plans address:

- Audit criteria, and extent,
- Frequency, and methods used,
- Responsibility for conducting the audit

Auditors are trained, objective, and never audit their own work. The manager responsible for area being audited quickly resolves identified problems. Audit results are reported, recorded and follow up actions are verified.

Monitoring and measurement of processes:-Monitor and measure the performance of the processes that make up the QMS. Compare these actual results to the planned results. Take corrective action to make sure the product or service meets requirements.

Monitoring and measurement of product:-During the production process, monitor and measure the product to assess if requirements are met. Keep the records showing,

- the product meets acceptance criteria,
- the name of the person who authorized release of the product,

- The product has proceeded through all of the planned process steps, including all planned verifications.

Analysis of data

The standard requires the organization to collect information on the functioning of the QMS. This information is then analyzed to evaluate the effectiveness and efficiency of your system and to identify opportunities for continual improvement of the QMS. Information collected and analyzed relates to:

- customer satisfaction,
- meeting product requirements ,
- process characteristics and trends,
- product characteristics and trends,
- Supplier performance.

Improvement

Continual improvement:-Make use of the quality policy, quality objectives, audit results, data analysis, corrective and preventive actions and management review to improve the QMS.

Corrective action:-When problems occur, fix the underlying process responsible for the defect. The thoroughness of each solution depends on how costly or unsafe the actual or possible problems are. Create written procedures for:

- satisfying customer complaints
- investigating and solving reported product and process problems,
- identifying the underlying cause of these nonconformities,
- understanding how to eliminate the cause of nonconformities,
- making sure corrective actions are carried out,
- keeping a record of corrective actions,
- Following up on corrective actions.

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Preventive action:-The same actions described above for corrective actions must be considered for problems that have yet to occur. This is called preventive action. Effective preventive action involves identifying the potential problem, examining the root cause, putting a plan in place to prevent occurrence of the problem, evaluating the effectiveness of the plan, recording actions taken, and reviewing the preventive actions taken. A written procedure is required to describe the preventive action process.

1.3 Project Overview

The project **"Quality Management System"** developed at application support section of Technology Division of SIFY Ltd. is supposed to satisfy all the directives discussed above. It has been developed after long and through study of the requirements identified by the development team at SIFY Ltd.

We can go through the guidelines put forward by the ISO standard one by one and see how I have tried to incorporate all the required testing into a single system. First of all we can take the Quality Management System proposed by the ISO standards. The Quality Management System (QMS) here is defined as the collection of processes, documents, resources, and monitoring systems that direct the work of an organization regarding product and service quality. The system developed here will meet all the above descriptions and along with that provide an environment that will help a user to satisfy most of the other sections in the ISO standards.

QMS system developed will satisfy the different requirements specified by the ISO standards. Documentation requirements, control of documents, and control of records are attended to. Documentation requirements are satisfied by developing a system where a user of the QMS should be able to see the most updated documents relating to the selected group. The documents that are published in the system are made sure to be certified by different levels of Management. Records of all

the modifications made to the documents are kept and can be viewed by the members of a particular group at any time.

Management Responsibility is one area the system will be concentrating on mostly. The system helps the management commitment to be followed by all the users of the system. All the changes in the customer focus can be tracked by the management directly. All the documents should be approved by the Management Representative. This helps the top level management to frame a quality policy. The quality policy should be able to be planned to meet the quality objectives.

Responsibility, authority and communication details should be assigned and well defined in advance. The managers should approve these documents before being published. This will help to avoid confusion to the least extent. A Management representative should responsible to approve all the documents before being published. Internal communication should also be able to be documented and published for all the groups in the organization.

Management review should be made easy by controlling all the documents directly by the MR himself. This will reduce extra time required to find out, go through and maintain all the records up-to-date. MR should be able approve or reject any requests made in the system and record a reason for doing so.

Resource Management is given prime importance by ISO standards. In a service based company like SIFY the resources are sophisticated, hi-tech networking equipment and qualified personnel. Qualified personnel management based on each group should be incorporated into the system. It should be able to keep track of processes to increase the competence and awareness of the qualified personnel by organizing routine training programs and keep track of the skill levels of the personnel.

Measurement analysis and improvement should be the mantra of all the organizations that wants it self to be on top of the competitive world. This is

possible only through means of routine internal audits, analysis of data monitoring and measurement of processes.

Enhancement should be continual. Whenever it is not happening there should be a way to over come this. The system should be able to record corrective actions to be taken in order to overcome the current weakness.

2.1 Existing System

Almost the requirements needed for meeting the ISO 9001:2000 standard is now carried out manually. All the general requirements was taken care by specialized persons in each department. They need to be through in their understanding on all aspects regarding the ISO 9001:2000 standards and needs an organized process for preparing and controlling documents. These people are controlled by a Management Representative who is responsible for the auditing and certification process.

Documentation requirements are the most important in the ISO 9001:2000 standard. It defines that all the process and procedures to be carried out in an organization should be documented. Whenever a new process or a changed in the current process needs to be made it will be drafted first. This document would be sent to the respective unit heads for approval as a hard copy. Once it is approved by the unit head it will be sent to the management representative for approval. In a dynamic and service oriented company like SIFY, new process or changes in the existing process flow is a day to day affair. So control of documents and control of records has become a very difficult task. Quality manual was put up as static pages in "INFODESK", which consisted of all current documents which was updated only once in a month. This doesn't serve the purpose at all as a particular document would has changed more than once, before the next update.

Management Responsibility is very high in the existing system. In order to keep management responsibility management review is conducted regularly. The purpose of a management review is to evaluate the overall performance of an organization's quality management system and to identify improvement opportunities. These reviews are carried out by the organization's top managers and are done on a regular basis. Management commitment needs to be kept in keeping the standards of the organization above the required level. Constant monitoring is carried out to keep the requirements fulfilled. SIFY has been certified for its network services, data center operations and customer relationship management. So it keeps a customer focus in all

its activities, which results in constant change and customization in the process followed. This results in a change in its quality policy every now and then. The current environment makes this difficult to follow.

Quality planning is defined as a set of activities whose purpose is to define quality system policies, objectives, and requirements, and to explain how these policies will be applied, how these objectives will be achieved, and how these requirements will be met. Quality planning in the current scenario is possible only through routine meetings, which is not very effective in a big organization like Sify. Here it is impossible to keep track of all the records need for every change made in the system. Quality objectives need to be followed by each and every one in the organization. These quality objectives are framed specific to each department in the organization based on the nature of their work. The current quality objectives defined are,

- Provide 24*7 hrs support to our customers.
- Empower people with information and knowledge
- Improvements based on oneself and customer assessment
- Translate customer requirements into workable solutions
- Be transparent and share the information with our customers
- Compliance to best practices in network and data center operation.

These quality objectives are with respect to the technology department in SIFY.

A quality policy statement defines or describes an organization's commitment to quality. This is framed for the whole organization. The current quality policy for SIFY is given below.

"To be the best-in-class service provider by practicing international standards in providing world class service and end-to-end network solutions"

Responsibility and authority of an associate should be assigned in order to avoid confusion. For convenience the associates in Sify has been divided into groups based on the responsibility and authority. All the associates are following a common set of responsibility and authority. In the existing system assigning of duties to individuals or transferring from one group to another group are done through personal emails or group email notifications. This process will not have any records for future reference.

Internal communication is an important factor in any organization. It represents how well the different groups of an organization coordinate with each other to get the work done. ISO 9001:2000 specifies that all the internal communication in the organization should be documented. The existing system is very poor in this aspect as the number of communication between groups remains very large.

In a service oriented company like SIFY the main resource is the qualified personnel itself. Resource management remains the key areas to concentrate to achieve an improvement in quality. Existing system doesn't have much say in this regard. This is where the provision of resources will become very important.

Measurement of quality is the most daunting process in the existing system. It is done by means of internal audit, monitoring and measurement of process, monitoring and measurement of product, and analysis of data. Internal audit is done from time to time by the management representative in order to get a clear idea of status of the quality measures and to check whether any corrective measures needs to be taken. Monitoring and measurement of process helps the management representative to understand the current process and assess the success of the current process and to make any changes if necessary.

Data to be analyzed are sent to the management representative. This denies the right for other members of the group to know the data sent for analysis. This will lead to the analysis of false or irrelevant data to be analyzed. Difficulty in reference

of the previously analyzed data makes the process of comparison of currently posted data very difficult.

Continual improvement is one of the theories to be followed for achieving better quality. This can be done only by regular training of associates in advanced topics. Existing system assigns an operations support manager to be in charge of organizing the training programs required. Associates are intimated through personal emails. Keeping track of the skill set of a particular associate is not possible in the current system.

2.2 Proposed System

First we can look in to the limitations of the existing system. We have discussed about the existing system head long in the previous section. Some of the main reasons that triggered the management into proposing a new system are,

- No control over documents or records,
- Maintenance of Quality Manual difficult,
- Management responsibility very high,
- Quality planning and implementation is time consuming,
- Responsibility and authority not distributed properly,
- Internal communication creates chaos,
- Quality assurance very hard,
- Training programs are not responded to properly.

The proposed system is designed to overcome the above limitations. System foreseen is an intranet site, which can be accessed by all the associates from within the organization. The site should allow access to the associates only after username and password verification. The main objective of the site will be to provide an online and most updated quality manual for the reference of all the associates. An associate when logged in should be able to view the process documents of his group as

well as all the other groups. It should provide control of documents as well as the records of all the modifications made in the quality manual.

There should be provision for adding, modifying and deactivating a document in the quality manual. These changes should be issued as request for change to the higher authorities. Once a request for change has been issued it should be sent to the evaluation of the unit head or group head. Group head should be able to approve or reject the request. Either approved or rejected the comments should be recorded.

Once approved by the unithead the request is forwarded to the management representative for approval. The management representative also should have the option to reject it and if so add comments for rejection.

The different type of documents that can be requested by an associate are,

- Qualified Personnel
- Qualification Criteria
- Responsibility & Authority
- Process
- Quality Plan
- Internal Communication

An associate who had initiated a request should be able to view the current status of the request; i.e. whether it is pending, approved or rejected by the unithead, approved or rejected by the management representative etc. An associate should be able to view the proposed document and status of the request made by any of the associates in that particular group.

The structure of an organization is the pattern of responsibilities, authorities, and relationships that control how people perform their functions and govern how they interact with one another. The proposed system should provide an

organizational view of the organization. The associates logged in should be able to see the whole organizational structure and on selecting a group they should be able to view all the documents available for that particular group. The documents should be of latest version. There should be an admin interface to customize the organization chart as and when required.

The training should be considered as an important part of the proposed system. Training module should be designed to present before the associates what all training options available based on the topic proposed for training programs. The associates training records should be kept in order to provide proof for under going training. The associates should be able to register for the training online.

Quality policy and Quality system procedures should be displayed online. Quality system procedures control processes or activities. A well defined procedure controls a logically distinct process or activity, including the associated inputs and outputs. Such a procedure defines the work that should be done, and explains how it should be done, who should do it, and under what circumstances. In addition, it explains what authority and what responsibility has been allocated, which supplies and materials should be used, and which documents and records must be used to carry out the work.

Management review meetings minutes should be recorded and displayed online. It should also point out the quality indicator as well as the trend indicator of a particular meeting. Audit plan for the current financial year should be available online.

Drawings, Forms and data needed for day today analysis should be available online and should be able to be uploaded as well as downloaded. It is not necessary for these to be approved but should provide an interface deactivate unwanted or invalid ones.

2.3 Project Description

Project has been designed based on the proposed system in mind. It has been designed to satisfy all the requirements put forward. . Documentation requirements, control of documents, and control of records are attended to. Documentation requirements are satisfied by developing a system where a user of the QMS is able to see the most updated documents relating to the selected group. The documents that are published in the system are made sure to be certified by different levels of Management. Records of all the modifications made to the documents are kept and can be viewed by the members of a particular group at any time.

Project is designed to give the user or associate a very easy to use and clear user interface. The username, group name, group id, unithead are being kept track off to get the maximum output. The design interface used is not too splashy yet not too dull. It is designed give the daily users an "at home" feeling.

The project design will give the opportunity to review the changes they are about to make in the most possible occasions, i.e. the user will be able to view the proposed document before even initiating the request. This design is supposed to give the user great confidence in using the system. It also helps to avoid accidental mistakes that happen regularly.

The project design to be implemented will provide the management representative and the unit head an opportunity to preview the document in the approved format even before approving it. All the documents in the project will have a prescribed format for headers. It will contain the requestor's name, activity, unit head and unit name. The approved document will have the ISO clause, revision number, revision date, SIFYCTO's and SIFYMR's signature. The preview documents are opened in another window for ease of viewing. All the pages in the site will have navigational links. All the activities will result in messages describing the result of the activity.

3.1 Hardware Environment

Server side

Any IBM Compatible high end server which can support a large number of users and superior processing speed will serve the purpose. The current desirable specifications for a best Server around should have – Pentium Xeon processor, DDR SDRAM memory, Ultra 320 SCSI, PCI-X I/O interconnect, and options for 2 GB Fiber channel storage solutions.

Client side

Any IBM PC compatible system that supports graphics with common I/O devices and Ethernet card for LAN connectivity will serve our purpose. The recommended hardware requirement can be stated as below.

- Pentium 166 MHz,
- 32 MB RAM
- 800 * 600 at 16 bit true color
- I/O devices like mouse and keyboard
- 10/100 Mbps Ethernet Card

Connecting media

Connecting media can be a leased line, dialup or LAN. In Sify the LAN connection is used to connect to the server, as it is an Intranet site. CAT 5 unshielded twisted pair cables are used in the local network with speeds ranging from 10/100Mbps.

Presentation

The presentation part is done by HTML (Hyper Text Markup Language) supported by cascading style sheets (CSS) and client side and server side scripting languages.

Server Side Scripting

PHP is used as server- side scripting language. It is used to create interactive dynamic websites. It is rapidly gaining popularity because of its flexible, cross-platform technology that provides amazingly powerful features.

Client Side Scripting

JavaScript is used to perform the client side scripting requirements like input validations. With its object oriented features and easy to understand scripting language it makes an easy choice to make. The fact that it is the language supported my most browsers directly or indirectly adds to it.

Tools

Browser: - A standard browser that support JavaScript cascading style sheets (CSS) and support layer technique is enough to access the quality management system at the client side.

Web server: - PHP will work with virtually all web server software including Microsoft's Internet Information Server (IIS), but is most often used with the freely available Apache server which is more economical and reliable. Apache is by far

the most widely used commercial web server around the world. In SIFY the system is run on an Apache server in a Linux Platform.

Database: - PHP will work with virtually all database software, including Oracle, Sybase, but is most often used with the free MySQL database software for which it has a specific optimization. The popularity of MySQL is justified by its speed and scalability which makes it our choice for Quality Management system.

PHP Parser:- In order to process PHP script instructions a parser must be installed to generate HTML output that can be sent to the web browser. The parser engine is identical irrespective of the operating system so PHP pages need no change to run on different platforms.

Operating System

The acronym LAMP is sometimes used to describe the most popular PHP environment configuration. The initials refer to Linux, Apache, MySQL and PHP. Unix based web servers are by far the most common worldwide and of these the totally free Linux provides the reliability needed for minimum down time and has robust security. This makes Linux our favored operating system platform.

3.3 About the Software

3.3.1 Apache Web Server

The name 'Apache' was chosen from respect for the Native American Indian tribe of Apache, well known for their superior skills in warfare strategy and their inexhaustible endurance. Secondarily and more commonly accepted,

it is considered cute name, which stuck. Apache is **"A PAtCHy server"**. It was based on some existing code and a series of "patch files".

The Apache httpd server

- Is a powerful, flexible, HTTP/1.1 compliant web server
- Is highly configurable and extensible with third-party modules
- Can be customized by writing 'modules' using the Apache module API
- Provides full source code and comes with an unrestrictive license
- Runs on Windows NT/9x, Netware 5.x and above, OS/2, and most versions of Unix, as well as several other operating systems
- Is actively being developed
- Encourages user feedback through new ideas, bug reports and patches
- Implements many frequently requested features, including DBM databases for authentication, Customized responses to errors and problems, Multiple Directory Index Directives, Unlimited flexible URL rewriting and aliasing etc.

3.3.2 PHP 4

PHP4 is the latest incarnation of PHP – the "PHP Hypertext Preprocessor". IT is a programming language for building dynamic, interactive web sites. In technical terms, PHP4 is a cross-platform, HTML-embedded, server-side web scripting language.

- **Cross-platform** – PHP4 code can be run, without alteration on computers running different operating systems. A PHP4 script that runs on Linux will generally run on Windows as well.
- **HTML-embedded** – PHP4 code is written in files containing a mixture of PHP instructions and HTML code.
- **Server-side** – The PHP4 programs are sun on a server – specifically, a web server.

- **A web scripting language** – PHP4 programs are run via a web browser. The web servers on which they reside are accessed, and this runs the program, sending any resulting output back to the browser.

ADVANTAGES OF PHP4

There are seven major reasons as to why PHP is superior –

a. Speed
b. Superior Memory Management
c. No Hidden Cost with PHP
d. MySQL makes it cooler
e. Closer to JAVA/C++ style of programming
f. No Show Stopper Bugs
g. Cross Platform Migration Strategy

3.3.3 MySQL Database

MySQL is a small, fast and capable relational database. The client portion of MySQL has been placed in the public domain while the rest of MySQL is distributed under license.

The following are amongst the features that MySQL supports.

- Multi-threading.
- Fixed and variable length records.
- An ODBC driver. (With source)
- A flexible privilege and password system.
- Up to 16 keys per table. Each key may have up to fifteen fields.
- Support for primary key fields, key fields and unique fields in CREATE.
- Support for the one to four byte integer, float, double, fixed and variable length strings, time stamps, variable length strings and blobs.

- C and Perl API.

- Supports Sun Solaris 2.5+ and Linux 2.0+ and possibly others.

- A fast thread based malloc system.

- All string comparisons for normal string fields are case insensitive. (Binary strings supported.)

- Aliases on tables and columns.

- All fields have default values. INSERT may be used on any subset of fields.

- The capability to easily redefine tables: including adding and deleting keys and fields.

4.1 Architectural Design

Dynamic web applications are presented as a three-tier architecture, in which the PHP scripts play a key role in the business logic layer of the architecture. Designing the application in layers, or tiers, is useful for many different reasons. In a multiple tier design, each tier can be run a separate machine, or machines, allowing for improved processing performance. Depending on the design, multiprocessor machines, or many different independent computers can be used to improve performance. Efficient layering can give structure to you application, promote scalability, and ease long-term maintenance requirements for your code.
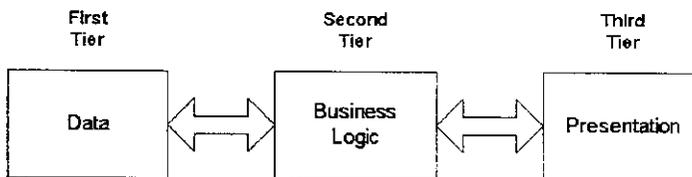
Figure 4.1.1 Three Tier Architecture

First-Tier: *Persistent Data Storage* – The underlying technology to implement this layer could be a variety of things including cookies, server side files or databases.

Second-Tier: *Business Logic Layer* – This is where one code any rules regarding the data stored and generally is the bulk of the application.

Third-Tier: *Presentation* – Enables the user to see the results of the business logic applied to the data stored. The third-tier is clearly the browser-application, rendering the output of the PHP Scripts for users.

**Server
Side**

**Client
Side**

Presentation

Internet

Browser

Contains all HTML
code in your
application

Rendering
and any client
side scripting
logic

Your main PHP script
controlling the logic and
flow of your application

**Business
Logic**

**Database
Abstraction Layer**
(PEAR DB)

Database
Use a the
appropriate
database here

**Persistent
Data Storage**
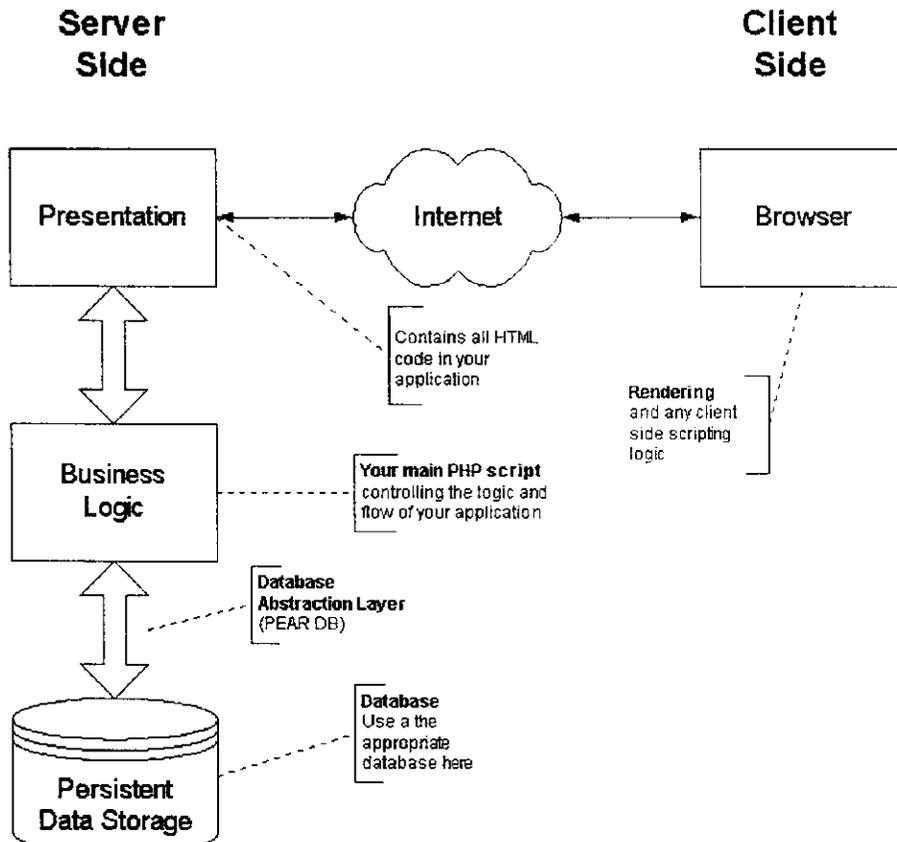
Figure 4.1.2 PHP Architectural Design

HTML – HyperText Markup Language, the language web pages are composed in, and which our application separates out into the presentation layer

PEAR – PHP Extension and Application Repository, PEAR is a code repository for PHP extensions and PHP library.

Prerequisites

- A working web server with PHP (Apache)
- PEAR installed in the PHP library path
- Working access to a relational database (MySQL)
- It is recommended that PEAR DB is reviewed and tested.

Sify

Entity-Relationship Diagram
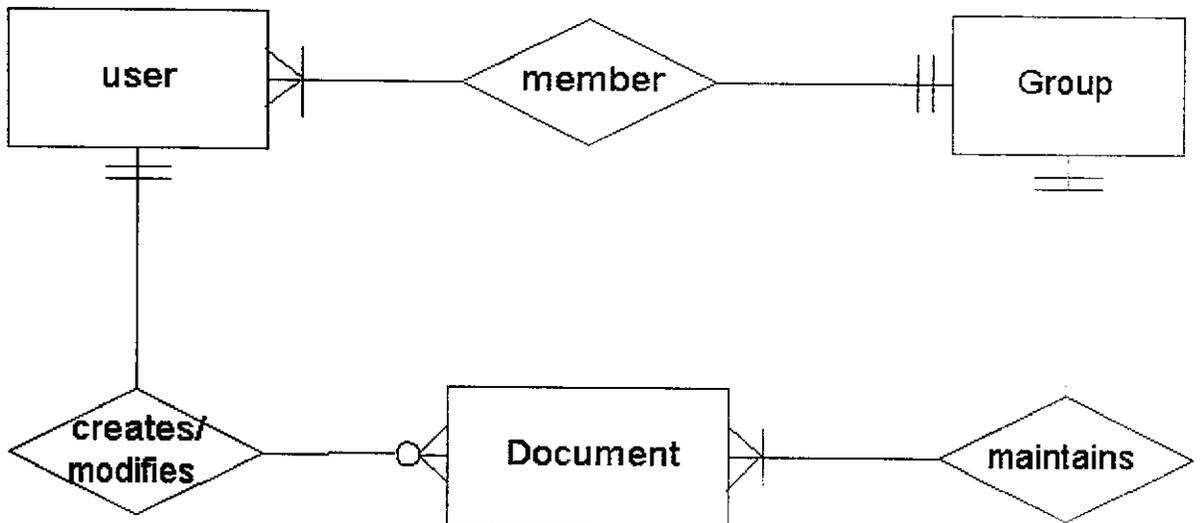
4.3 Context Level Diagram of Quality Management System

Context Level Diagram

Document Change Request Form	Organization Chart
Quality System Procedures	Management Zone
Quality Manual	Quality Management System
Training	Audit Plan
	Administration

Document Change Request Form
Add Document

```
                         User

                  Data          Add
                              Document
                                              newrequest
              Document type

              Accept    Data    Evaluate    Existing Data
               Data             Data

                              Accepted
                                Data

                              Issue a
                               DCRF
                             request to
                             add a new
                              document

                  Data                  Data

           newrequest                        transaction
                                                table
```

Sify
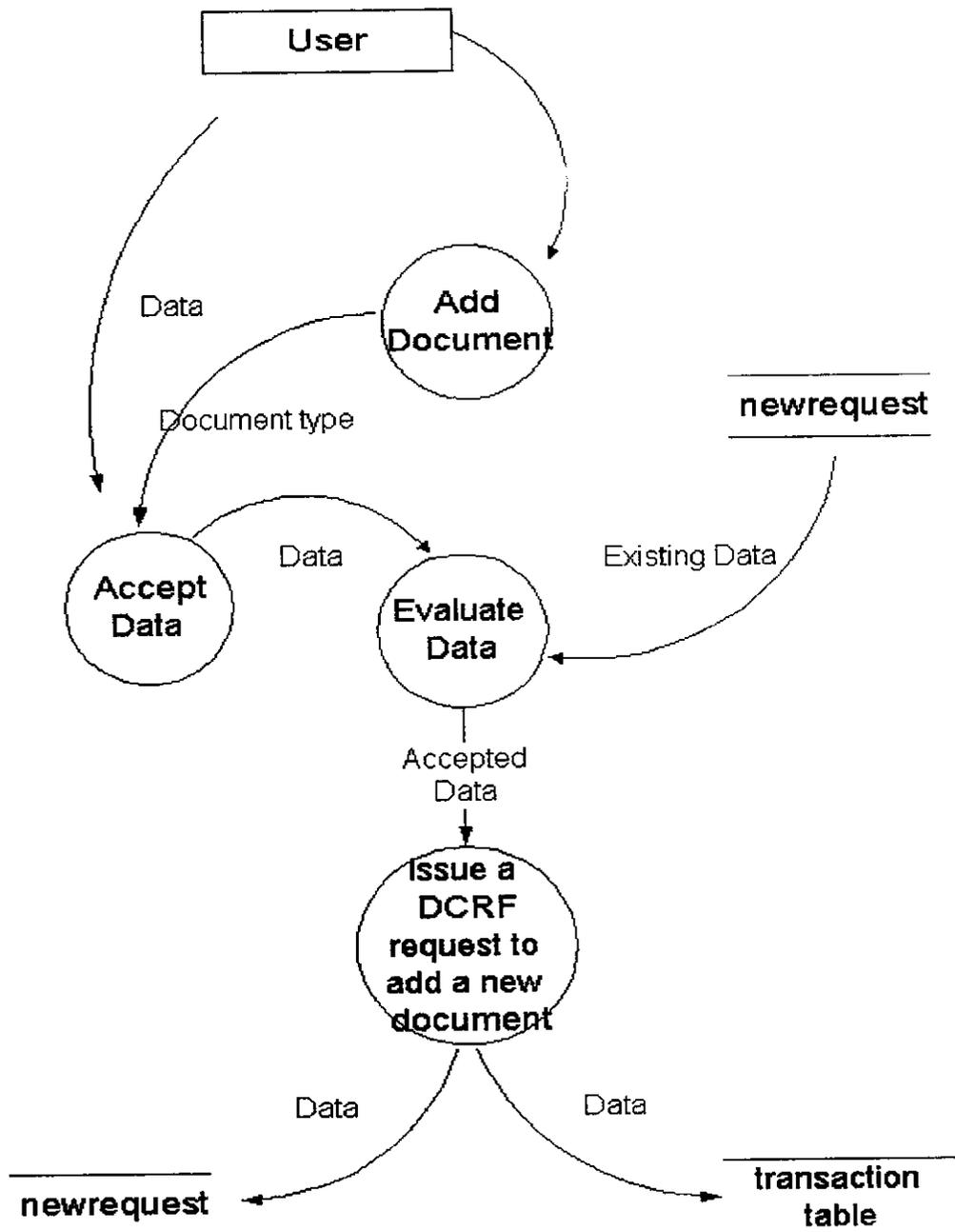
Document Change Request Form
Modify Document
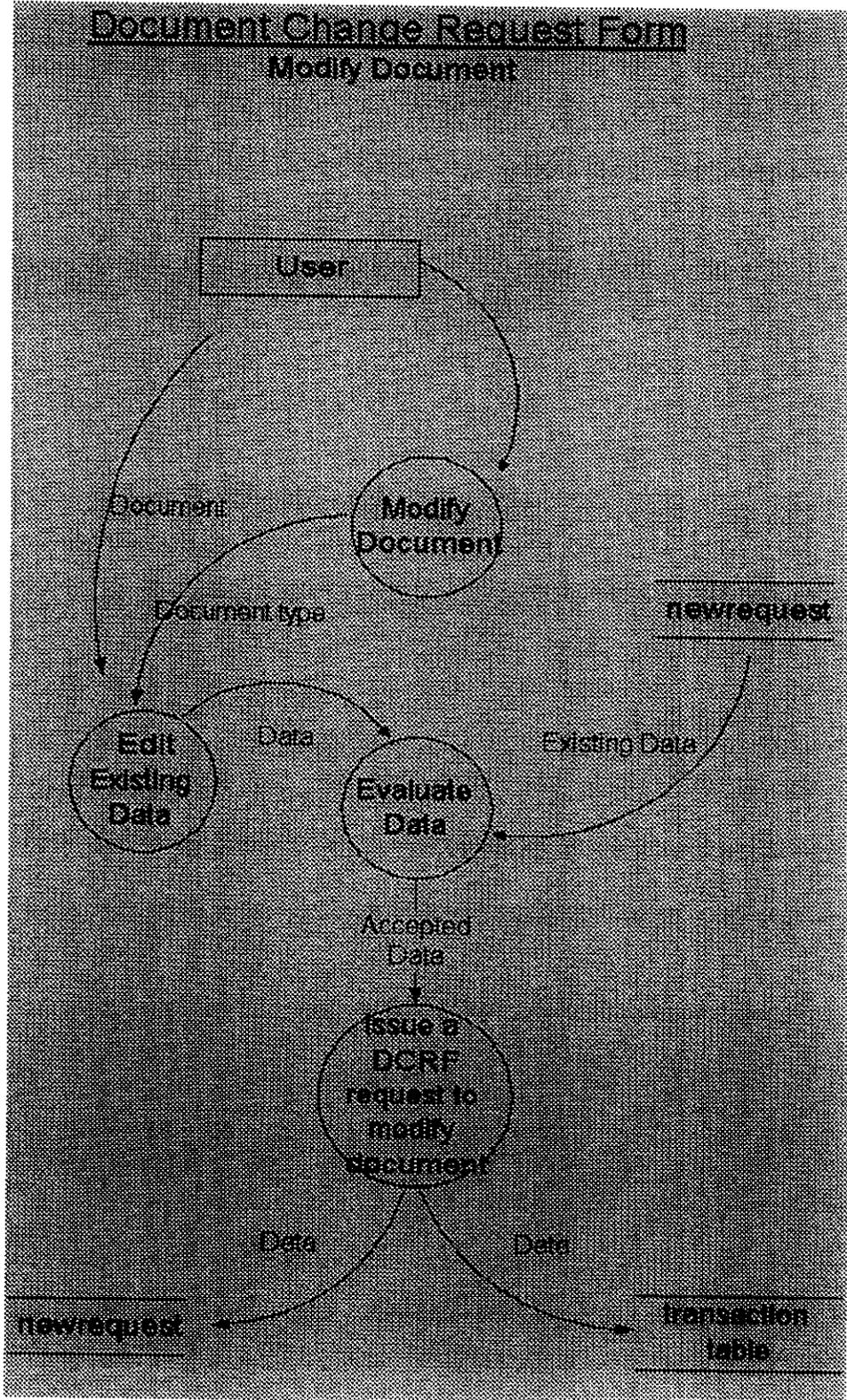
Document Change Request Form
Deactivate Document
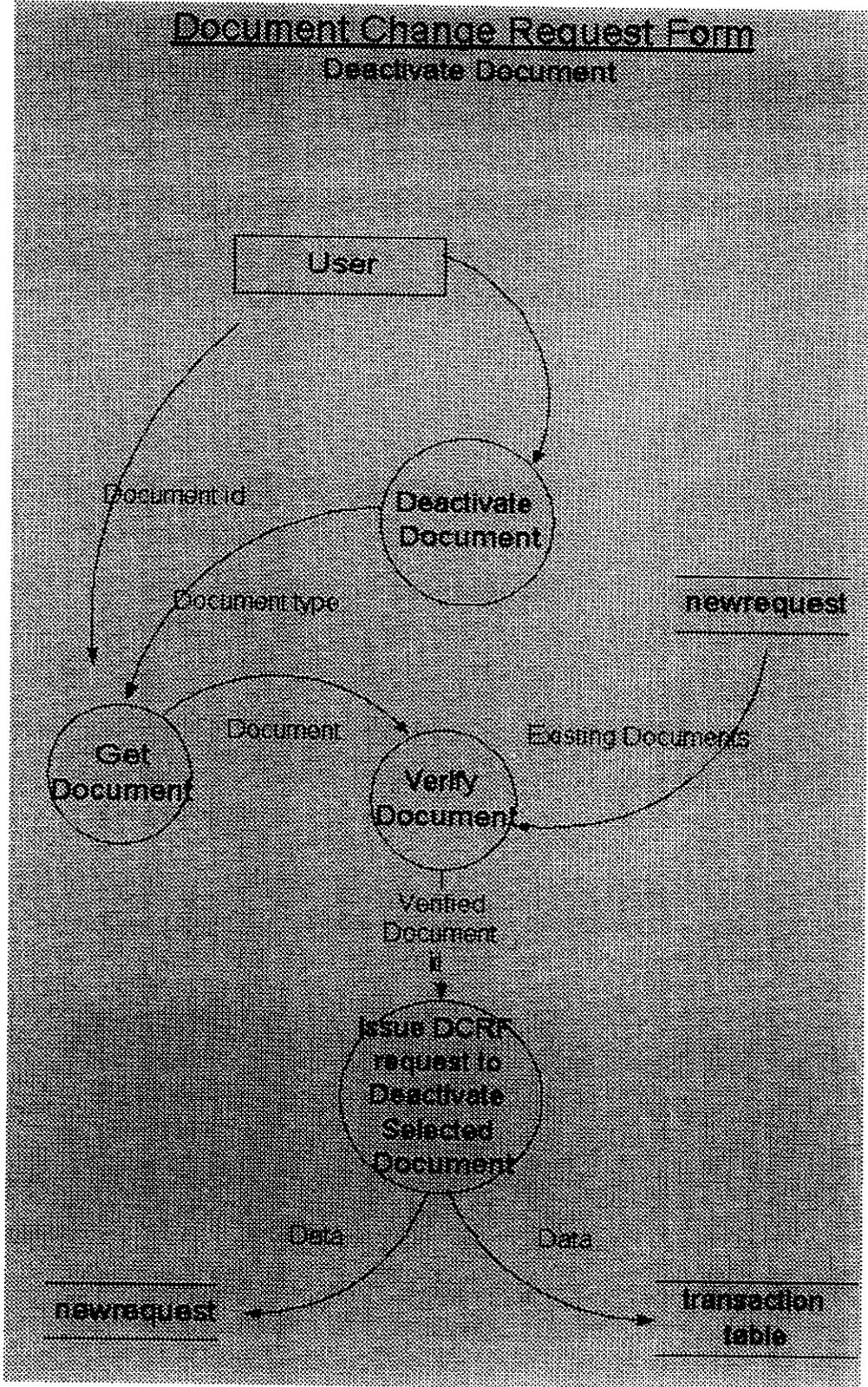
Document Change Request Form
View Request
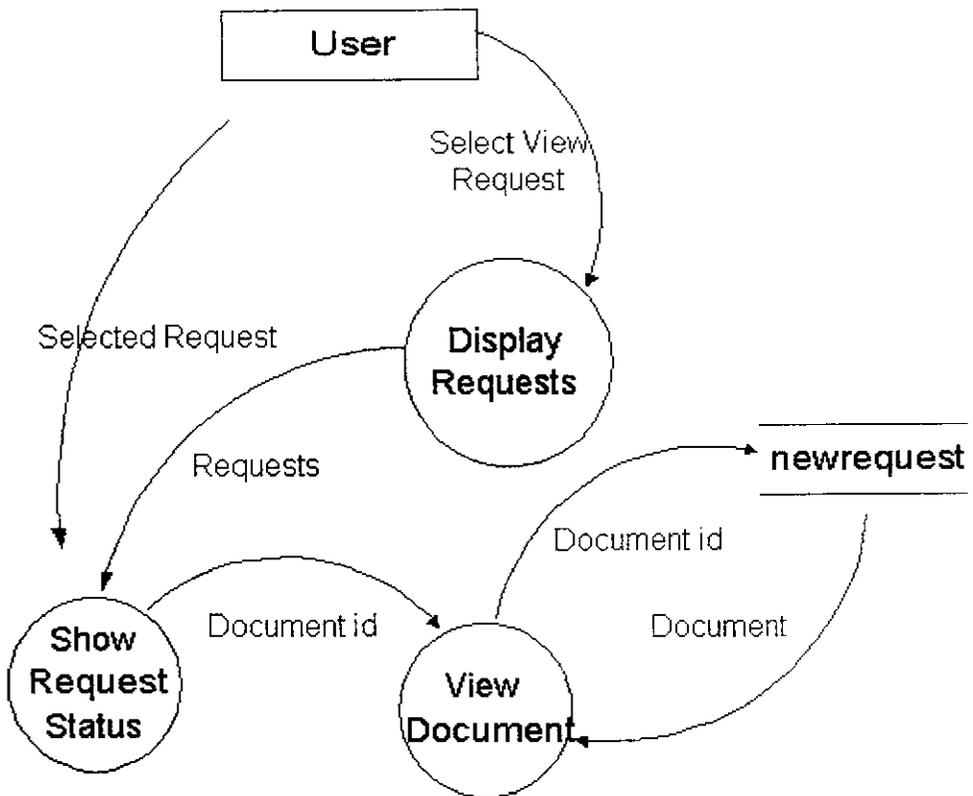
Document Change Request Form
Unit Head Approval

```
                    ┌──────────────────┐
                    │      User        │
                    └──────────────────┘
                                    │
                                    ▼
                            ╭──────────────╮
                            │   Initiates   │
                            │   Request     │
                            ╰──────────────╯
                          ╱
             Request    ╱
                      ╱
        ┌──────────────────┐
        │    Unit head     │──────────╮
        └──────────────────┘          │
                      Verdict          ▼

                              ─────────────────
                               newrequest
                              ─────────────────
```
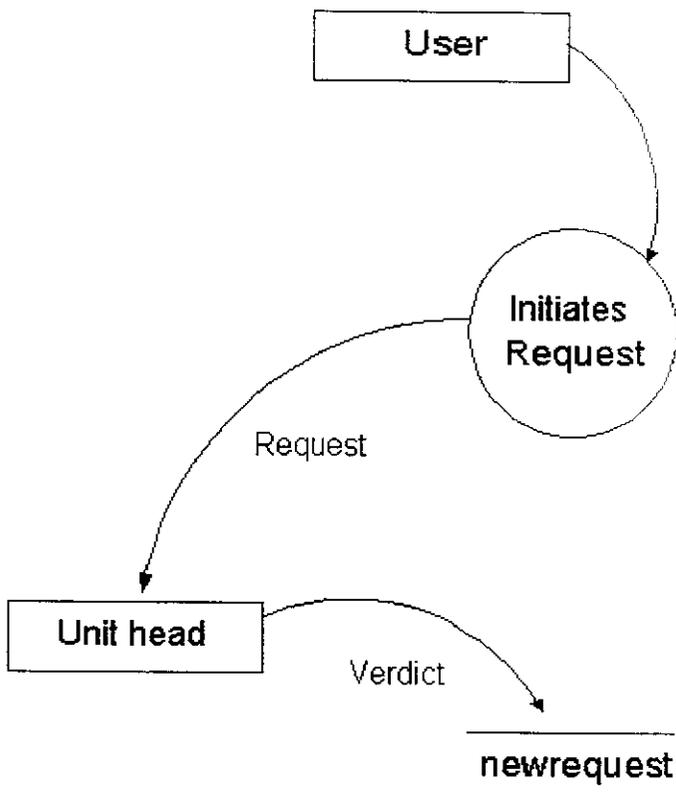
Document Change Request Form
Management Representative Approval

User

Initiates
Request

Request

Unit head

Approved Request

Management
Representative

Verdict

newrequest

If Approved

Get Document

Post
Request as
Official
Document

Document

Post Document

Master table

Sify
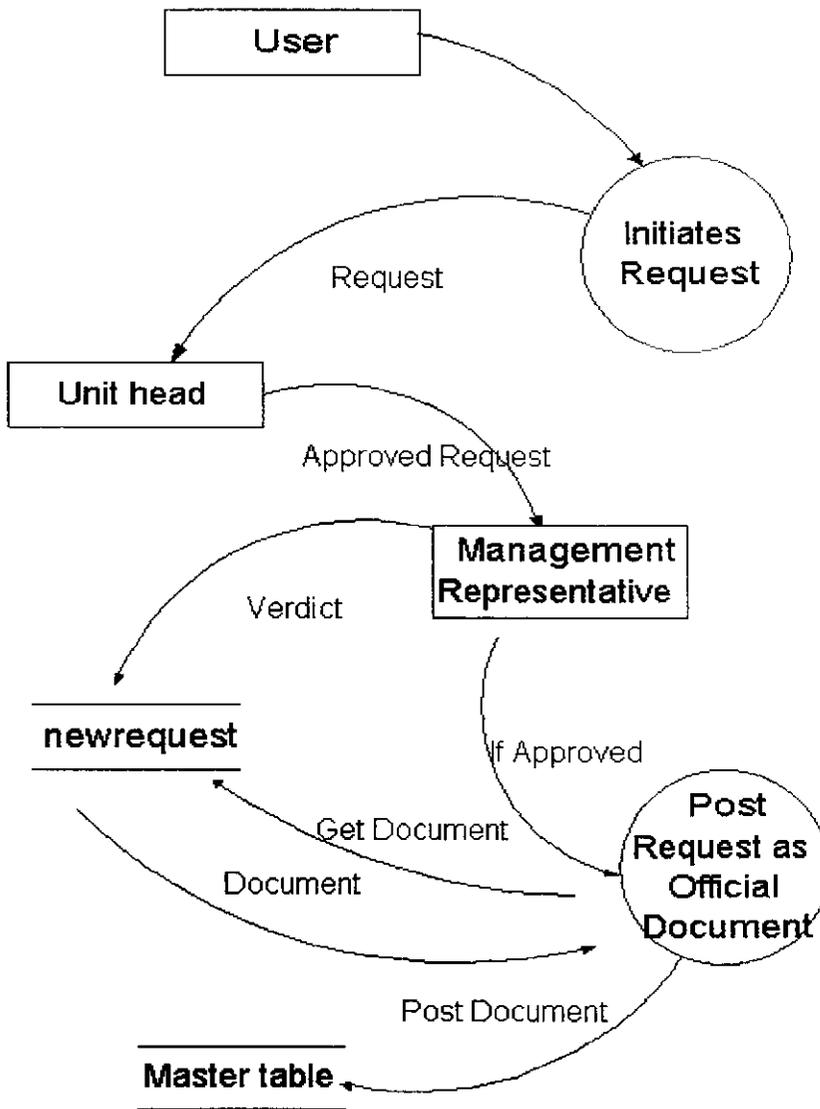
The database is organized as various master and transaction tables containing the information about the process and its activities. The various tables used in the database for are specified below. The various fields, type and constraints are shown below.

Tables are:

1. newrequest
2. transisogroup
3. processqp
4. internalcmm
5. masterisogroup
6. masterinternalcmm
7. masterprocessqp

NEWREQUEST

Field	Type	Null	Key	Default	Extra
reqid	bigint(15)		PRI	NULL	auto_increment
reqdate	datetime	YES		NULL	
groupid	bigint(15)	YES		NULL	
document	text	YES		NULL	
documentid	bigint(15)	YES		NULL	
initiator	bigint(5)	YES		NULL	
status	char(1)	YES		NULL	
mrname	varchar(25)	YES		NULL	
appdate	datetime	YES		NULL	
unithead	bigint(5)	YES		NULL	
reasonchange	blob	YES		NULL	
groupname	text	YES		NULL	
activity	varchar(20)	YES		NULL	
modid	bigint(15)	YES		NULL	
reasonreject	blob	YES		NULL	
active	char(1)	YES		NULL	
incorporated	varchar(10)	YES		NULL	
distributed	varchar(10)	YES		NULL	
count	int(5)	YES		NULL	

TRANSISOGROUP

Field	Type	Null	Key	Default	Extra
transid	bigint(15)		PRI	NULL	auto_increment
groupid	bigint(15)	YES		NULL	
doctype	text	YES		NULL	
education	text	YES		NULL	
experience	text	YES		NULL	
skill	text	YES		NULL	
training	text	YES		NULL	
responsibility	text	YES		NULL	
authority	text	YES		NULL	
details	text	YES		NULL	
grpmembers	text	YES		NULL	

PROCESSQP

Field	Type	Null	Key	Default	Extra
qpid	bigint(15)		PRI	NULL	auto_increment
groupid	bigint(15)	YES		NULL	
processname	text	YES		NULL	
stage	text	YES		NULL	
controlcharac	text	YES		NULL	
checkmethod	text	YES		NULL	
refdocument	text	YES		NULL	
responsibility	text	YES		NULL	
record	text	YES		NULL	
scope	text	YES		NULL	
objective	text	YES		NULL	
input	text	YES		NULL	
output	text	YES		NULL	
process	text	YES		NULL	
monitoring	text	YES		NULL	
records	text	YES		NULL	
interface	text	YES		NULL	
specification	text	YES		NULL	
doctype	text	YES		NULL	
status	char(1)	YES		NULL	
controllimit	text	YES		NULL	
reasonchange	text	YES		NULL	
reqid	bigint(15)	YES		NULL	

INTERNALCMM

Field	Type	Null	Key	Default	Extra
commid	bigint(5)		PRI	NULL	auto_increment
srcgrp	bigint(15)	YES		NULL	
destgrp	bigint(15)	YES		NULL	
title	text	YES		NULL	
formno	text	YES		NULL	
purpose	text	YES		NULL	
freq	text	YES		NULL	
destgrpname	text	YES		NULL	
status	char(1)	YES		NULL	
reqid	bigint(15)	YES		NULL	

MASTERISOGROUP

Field	Type	Null	Key	Default	Extra
groupid	bigint(5)		PRI	NULL	auto_increment
group_name	varchar(100)	YES		NULL	
location	int(11)	YES		NULL	
groupdesc	varchar(100)	YES		NULL	
groupmembers	text	YES		NULL	
unithead	text	YES		NULL	
procmax	int(25)	YES		NULL	
procmin	int(25)	YES		NULL	
currproc	int(25)	YES		NULL	
education	text	YES		NULL	
experience	text	YES		NULL	
skill	text	YES		NULL	
training	text	YES		NULL	
responsibility	text	YES		NULL	
authority	text	YES		NULL	
details	text	YES		NULL	
qprevno	bigint(15)	YES		NULL	
qprevdate	datetime	YES		NULL	
qcrevno	bigint(15)	YES		NULL	
qcrevdate	datetime	YES		NULL	
rarevno	bigint(15)	YES		NULL	
rarevdate	datetime	YES		NULL	
parentgroup	bigint(5)	YES		NULL	
options	text	YES		NULL	

MASTERINTERNALCMM

Field	Type	Null	Key	Default	Extra
commid	bigint(5)		PRI	NULL	auto_increment
srcgrp	bigint(15)	YES		NULL	
destgrp	bigint(15)	YES		NULL	
title	text	YES		NULL	
formno	text	YES		NULL	
purpose	text	YES		NULL	
freq	text	YES		NULL	
active	char(1)	YES		NULL	
revno	bigint(15)	YES		NULL	
revdate	datetime	YES		NULL	
destgrpname	text	YES		NULL	

MASTERPROCESSQP

Field	Type	Null	Key	Default	Extra
qpid	bigint(15)		PRI	NULL	auto_increment
groupid	bigint(15)	YES		NULL	
processname	text	YES		NULL	
stage	text	YES		NULL	
controlcharac	text	YES		NULL	
checkmethod	text	YES		NULL	
refdocument	text	YES		NULL	
responsibility	text	YES		NULL	
record	text	YES		NULL	
scope	text	YES		NULL	
objective	text	YES		NULL	
input	text	YES		NULL	
output	text	YES		NULL	
process	text	YES		NULL	
monitoring	text	YES		NULL	
records	text	YES		NULL	
interface	text	YES		NULL	
specification	text	YES		NULL	
doctype	text	YES		NULL	
active	char(1)	YES		NULL	
controllimit	text	YES		NULL	
procid	varchar(10)	YES		NULL	
revno	bigint(15)	YES		NULL	
revdate	datetime	YES		NULL	

Sify

Sify

5.1 Functional Description

Site Navigation

The site has been divided into three panes. The top pane contains the title. The bottom left pane contains the Navigational Menu from which we get the links to all the other pages. The bottom right pane contains the actual content. When we click on a link in the left nav the contents is displayed in the right pane. Most of the pages are provided with back link to go back to the previous page. All messages are displayed in separate pages in the right pane.

Access Restriction

The access restriction for this site is done by username and password authentication. The site will be available only in the local network. Those who have remote access to the local network can also have access to the site.

Quality Manual

Quality Manual documents the organizations Quality management system. It contain the details of different specifications followed for

- Revision Record
- Preface
- About Sify-Technology
- Definitions and Abbreviations
- Scope of Quality System
- Organization
- General Requirements
- Documentation Requirements

- Management Commitment
- Quality Policy and Objectives
- Planning

Organization Chart

Organization chart is used to view the structure of the organization. The structure will vary upon the location you select. It displays different groups or units as its nodes. When you click on a particular node a drop down menu will appear. It will display all the documents available for that particular group. The user can select the document he wants to view.

Management Zone

Management zone is used to create transparency for the quality system procedures adopted by the organization. Any associates can login and view the minutes of all the management review meeting being held. Quality indicators as well as the trend indicators are captured to give a brief idea of what is going on.

Document Change Request Form

Document change request form initiates a request to add/modify or deactivates a document. Quality management system requires all the processes being carried out in an organization to be documented. These documents need to be changed now and then. DCRF provides an interface where an associate can go in and key in the details of the document and submit it as a request.

Add Document – Qualified Personnel

This option will present you with a form that displays all the available associates who are not part of any other group. The person logged in can select and add other associates to ones group. The duties can be assigned individually at this time. There is an option to preview the document before submitting.

Add Document – Qualification Criteria

This option will add the details of qualification criteria needed for a particular group. It has preview option and multiple entry option for a single field. This will help to standardize the human resource management.

Add Document – Responsibility &Authority

This option will add the responsibility and authority assigned for a particular group. It has preview option and multiple entry option for a single field. This will clearly define the work to be done by each group.

Add Document – Quality Plan

This option will add the details of quality plan of the current year of the particular group. The entry is made process by process. A process can have different stages. When you try to add an entry in quality plan two requests are issued. One is to add the process and its stages to the quality plan. Another one is to add the specification of the process. Both are posted simultaneously. It has preview option.

Add Document – Internal Communication

This option will add the communication details for a particular group with other groups. There can be more than one communications issued in a single request. There can be more than one communications made to a particular group. It has preview option. It helps to improve the coordination between groups in the organization.

5.2 Special Features of Language/ Utility

PHP is an object based language. It doesn't support inheritance. Even then its objects had provided with excellent features and memory management making PHP the language of our choice.

Objects were used in this project in order to display the organization chart. Here we needed to build a tree structure before displaying the Organization chart. Each group needed to have different options depending upon the documents available. The method used here is to take each node it the organization chart as an object and create a tree structure with these objects.

Once the structure is displayed, Layers were used to display the drop down box. JavaScript was used to capture the mouse over events and display the context sensitive dropdown menu. DIV tag was used in browser, which doesn't support the layers.

Window and Document objects provided by JavaScript are used extensively through out the project. History object is used for navigational purpose.

6.1 Testing

Software testing is defined as the process by which one detects the defects in the software. It is considered as the final opportunity to detect and convert or rectify any defects that may be there in the developed product. Testing is a process, which is done with the explicit intention of finding errors that would make the program fail. In short, system testing and quality assurance is a review of the software product and related documentation for completion, correctness, reliability and maintainability.

The first step in system testing is to prepare a plan that will test all the aspects of the system. System testing can be grouped as:

- Unit testing
- Integration Testing
- Validation testing
- Performance testing
- Load testing
- User interface testing

Unit Testing

This is the first level of testing in which different modules are tested against the specification produced during the design of modules. Unit Testing is done for the verification of the code produced during the coding phase and to test the internal logic of the modules. It refers to the verification of a single program module in an isolated environment.

After coding each page is tested and run individually. All unnecessary coding statements are removed and it is ensured that all the functionality works as expected. Any logical errors found are corrected.

Integration Testing

Integration Testing is a systematic technique for constructing the program structure while conducting test to uncover errors associated with interfacing. Many tested modules are combined into a subsystem, which is then tested. This testing is the verification of the interfaces among system parts. Integration Testing addresses the issues associated with the dual problems of verification and program construction.

Validation Testing

Validation Testing provides the final assurance that the software meets all functional, behavioral and performance requirements. The software is completely assembled as a package, interfacing errors are uncovered and collected and a final series of software test validation testing may begin. Validation succeeds when the software functions in a manner that is reasonably expected by the user. Validation testing refers to the process of using software in a live environment to find errors. The feedback from the validation phase generally produces changes in the software to deal with errors and failures that are uncovered so far.

Validation Testing is done by inputting invalid data and check for acceptance of data and invalid output. A test case is a set of data the system will process as normal input. However data are usually created with the intent of determining whether the system will process them correctly.

Performance testing

Performance testing is to verify the performance requirements have been achieved or not. It verifies the system response time for designated transactions and measure response times, transaction rates, and other time sensitive requirements.

Load testing

Load testing is performed by subjecting the system-under-test to varying workloads to evaluate the systems ability to continue to function properly beyond the expected maximum workload. It evaluates the performance characteristics (response time, transaction rates and other sensitive issues)

User interface testing

User interface testing is done to verify the users interactions with the software. It ensures that the user interface provides the user with the appropriate access and navigation through the functions of the applications. It also ensures that the objects within the function as expected and conform to industry standards. (To reflect business functions and requirements, including window to window, field to field and use of access methods (tab keys, mouse movements etc)

6.2 Test Cases

The test cases for Quality management system have been selected based on various categories. These categories are, Data handling, Data validity and processing speed

Data handling is checked for the amount of data the system can handle at a time. This includes inputting a large amount of data for the regression testing. A large amount of backlog entry exists for this test case.

Data validity is a special case. It is done by entering a document for the same group at the same time and checked for any inconsistent states.

Processing speed test cases check for how fast a particular request is posted processed and sent back.

7. Conclusion

7.1 Maintenance & Enhancements

Quality management system has a very easy to use administration module. This helps the administrator to add/delete groups, change the display options and change the structure organization chart etc. A separate interface has been made to key in the backlog entries.

Enhancements options exist in developing a corrective action report module and a self-audit kit. Corrective action report deals with reporting the actions taken to correct the existing changes reported earlier. The managers perform a self-audit of their respective groups to check the quality assuarance use self-audit kit. It helps the managers to evaluate the current quality indicator of their group. Weekly reports of self-auditing keep track of the improvement of a particular group.

7.2 References

Books

- Leon Atkinson; Core PHP Programming: Using PHP to Build Dynamic Web Sites; Pearson Education Asia; 2001

- James A. Senn; Analysis & Design of Information Systems; McGraw Hill International; 1989

- Roger S. Pressman; Software Engineering; McGraw Hill International; 1997

- William Perry; Effective Methods for Software Testing; Wiley-QED Publications; 1995

Web Sites

- www.php.net
- www.phpbuilder.com
- www.mysql.com
- www.devguru.com

8. Appendix

8.1 Sample Screens

Login Page

Location Selection Page

Sify

Welcome Page

File   Edit   View   Favorites   Tools   Help

Back   Forward   Stop   Refresh   Home   Full Screen   Media   History

Address http://infodeskdev.sify.net/newiso/devel/

Quality Management System — Sify

Appointment of MR
Quality Manual
Quality System Procedures
Organisation Chart
Management Zone
Master Lists
Audit Plan
Training
Drawings
Forms
Data Analysis
QMS Forms
Feedback Report
Main Page

April 01, 2002

APPOINTMENT OF MANAGEMENT REPRESENTATIVE

I appoint Mr. Srinivasan C R, GM – Technical, as the Management Representative for Satyam Infoway Limited. He reports to the undersigned on all related matters.

He will be responsible for:

- Ensuring that processes needed for the quality management system are established, implemented and maintained in accordance to ISO 9001 2000

- Reporting on the performance of the quality management system and any need for improvement

- Ensuring the promotion of awareness of customer requirements throughout the organization

Internet

Quality Manual

File   Edit   View   Favorites   Tools   Help   Address

Quality Management System   Sify

Appointment of MR
Quality Manual
Quality System Procedures
Organisation Chart
Management Zone
Master Lists
Audit Plan
Training
Drawings
Forms
Data Analysis
QMS Forms
Feedback Report
Main Page
Logout

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Sec.No.	Title	ISO 9001 Cl.#	Rev.#	Dated	Pages
2.0	Revision Record	4.2.3	2	01.08.2002	1
3.0	Preface	-	0	05.9.2001	1
4.0	About SIFY-Technology	-	1	03.12.2001	2
5.0	Definitions and Abbreviations	-	2	01.08.2002	1
6.0	Scope of Quality System	4.2.2	2	01.08.2002	1
7.0	Organization	5.4.1	2	01.08.2002	1
8.0	General Requirements	4.1	2	01.08.2002	2
9.0	Documentation Requirements	4.2	0	05.9.2001	2
10.0	Management Commitment	5.1	0	05.9.2001	1
11.0	Quality Policy and Objectives	5.3	0	05.9.2001	1
12.0	Planning	5.4	2	01.08.2002	1

Quality System Procedures
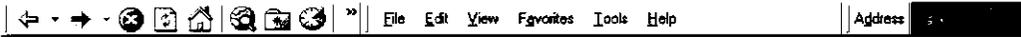
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QUALITY SYSTEM PROCEDURES

QSP100-Control of Documents

QSP 101- Control of Records

QSP102-Management Review

QSP103- Internal Audit

QSP104-Control of Nonconforming product

QSP105-Improvement

Management Zone

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MANAGEMENT ZONE

MRM Minutes	Quality Indicators	Trends
MRM 1 - (Apr-2001 to Jun-2001)	Quality Indicator - 1	Trend Indicator
MRM 2 - (Jul-2001 to Sep-2001)	Quality Indicator - 2	Trend Indicator
MRM 3 - (Oct-2001 to Dec-2001)	Quality Indicator- 3	Trend Indicator
MRM 4 - (Jan-2002 to Mar-2002)	Quality Indicator - 4	Trend Indicator
MRM 5 - (Apr-2002 to Jun-2002)	Quality Indicator 5	Trend Indicator
MRM 6 - (Jul-2002 to Sep-2002)	Quality Indicator - 6	Trend Indicator
	Quality Indicator - 7	Trend Indicator
MRM 7 - (Oct-2002 to Jan-2003)	Quality Indicator - 8	Trend Indicator

ORGANIZATION CHART

Organization chart displays the structure of the organization. It provides an easy user interface for accessing document pertaining to a particular group. When we select a group the documents available for that group are listed in the drop down menu. When on any of the options you will be presented with that particular document of selected group.

```
SIFYCTO
    │
    ├── SIFYMR
    │
    └── SIFYTOH
            │
            └── SIFYNEH
                    │
                    └── SIFYOPM
                        ┌─────────────────────────┐
                        │ Qualified Personnel      │
                        │ Qualification Criteria   │
                        │ Responsibility & Authority│
                        └─────────────────────────┘
                                │
                                ├── SIFYHOH
                                │       │
                                │       └── SIFYHDE
                                │           ┌──────────────────────────────┐
                                │           │ Qualified Personnel          │
                                ├── SIFYCSE │ Qualification Criteria       │
                                │           │ Responsibility & Authority   │
                                │           │ Specifications               │
                                │           │ Quality Plan                 │
                                │           │ Process                      │
                                │           │ Internal Communications      │
                                ├── SIFYTNOE│ Forms                        │
                                │       │   │ Data Analysis                │
                                │       │   └──────────────────────────────┘
                                │       └── SIFYNOE
                                │
                                └── SIFYCOM
                                        │
                                        └── SIFYIIC
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Sify

Sample Document
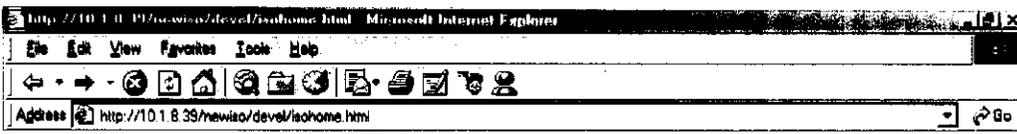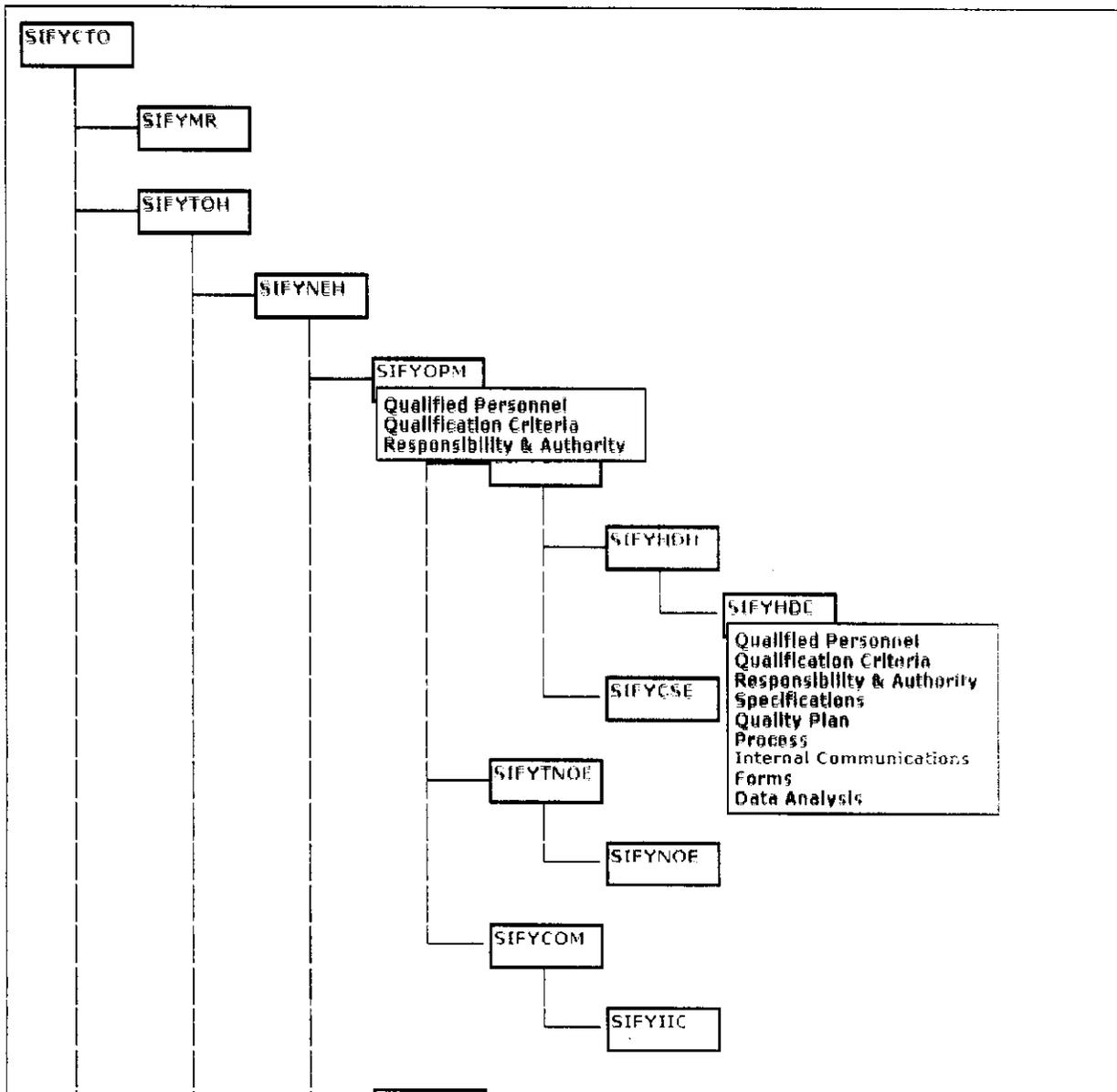
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Sify Limited

Dept code : SIFYNSE	Dept : NETWORK SUPPORT ENGINEER
SP Code : SP/ 501	ISO Cl. # : 6.2.2
Rev no:# 2	Rev Date : 21-01-2003

Qualification criteria for SIFYNSE

Education	Experience	Skill	Training
• Degree or Diploma in Engineering.	• 0-5 years experience in network engineering.	• Installation, configuration and management of Routers, Access Servers, Firewalls.	• Time management. • Communication and Presentation skills. • Technical courses on network engineering. • Management of AAA systems.

Approved By	Issued By
SIFYCTO	SIFYMR

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Audit Plan

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AUDIT PLAN - ANNUAL

FUNCTION	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
SIFYCTO	•		•				•				•	
SIFYTOH	•		•	•	•	•	•	•	•	•	•	•
SIFYMR	•		•	•	•	•	•	•	•	•	•	•
SIFYSEH	•		•				•				•	
SIFYNEM	•		•				•				•	
SIFYROM	•		•				•				•	
SIFYOPM	•		•		•		•				•	
SIFYHDH	•		•	•	•	•	•	•	•	•	•	•

Done   Internet

Sify

Training Module

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Sify Employee Education & Development

Foundation Topics

Advanced Topics

Customized Topics

General Topics

Specialized Topics

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Sify Employee Education & Development

CUSTOMIZED TOPICS												
Topic Name	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
SESM / SSG - SIFYC004				A	A	A						
SIFY BEACON - SIFYC003				A	A	A						
WAY2TALK ARCHITECTURE - SIFYC002				A	A	A						

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Address: http://infodeskdev.sify.net/newiso/devel/isohome.html

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Sify Employee Education & Development

Topic Name				OCT	NOV	DEC
SESM / SSG - SIFYC00.						
SIFY BEACON - SIFYC003						
WAY2TALK ARCHITECTURE - SIFYC002						

SEED

Schedule	2003-04-26
No. of Seats	20
Location	CHENNAI_TDL
Internal Trainer	,VISHNU_RAM
External Trainer	NIL
Duration	9:00 AM - 7:00 PM

CLOSE

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CUSTOMIZED TOPICS - WAY2TALK ARCHITECTURE - SIFYC002

This course is designed for Engineers in 1 way franchisee/Operations/Tech support/Networking / Systems.

It develops a better understanding of how Way 2 Talk works.

Passing this course proves one's competence and helps distinguish one with a proven knowledge on Way 2 Talk Setup.

Course Objective

By attending, delegates will be able to;

- Understand the Way2 Talk service setup and how it works.
- Understand about H.323 and SIP.
- Understand how IP Phones works.

Target Audience

Entire Technology.

Duration

1 Day

Course Timings

9 AM - 7 PM

Content

Way2talk

- VOIP Basics.
- Architecture.
- H.323.
- SIP.
- IP Phones.
- Functionality.

Learning Methods

This is a highly stimulating and motivating Programme for us since this is Our Own Product.

The course is interactive and has a practical Content involving discussion and hands-on sessions.

Delegates leave the course with increased Confidence to handle Way 2 Talk problems.

Click here to Register

Sify

Quality Management System

Document Change Request Form Error!

Quality Management System Sify

Appointment of MR	**Document Change Request Form**
Quality Manual	
Quality System Procedures	
Organisation Chart	**Add document**
Management Zone	Qualified Personnel
Master Lists	Qualification Criteria
Audit Plan	Responsibility & Authority
Training	Quality Plan
Drawings	Internal Communication
Forms	**Modify document**
Data Analysis	**Deactivate document**
QMS Forms	**View request**
Feedback Report	**Unit Head Approval**
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SIFYMR/F.10/A/2001

Document Change Request Form -
Internal communication

Reqestor's Name	SMITHA_S	**Activity**	NEW REQUEST
Unit Head	RAJASEKAR_G	**Unit name**	SIFYASE

Reason for change

To define a new communication process for SIFYASE

To SIFYOPM

Title	Routine Consistency Check

Form No IC/45

Purpose	To check for the consistency of existing systems

Frequency	Daily

Do you want add another communication?

Preview | Yes | No

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http://infodeskdev.sify.net/newiso/devel/index.htm - Microsoft Internet Explorer   _|&|x|

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Address | http://infodeskdev.sify.net/newiso/devel/index.htm   ▼ ⤳Go

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http://infodeskdev.sify.net/newiso/devel/newqlty/dcrfinternalcmmpreview.php - Microsoft Internet... _|□|x|

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Sify Limited

Dept code : SIFYASE   **Dept : APPLICATION SUPPORT ENGINEER**

IC code : IC/ 1800   **ISO Cl. # : 5.3.3**

Internal Communication for SIFYASE

From	To	Title	Formno	Purpose	Frequency
SIFYASE	SIFYOPM	Routine Consistency Check	IC/45	To check for the consistency of existing systems	Daily

Close ⤶

| 💋 Internet

| **Do you want add another communication?** |
| Preview | Yes | No |

| 💋 Internet

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Quality Management System   Sify

SIFYMR/F.10/A/2001

Document Change Request Form

Request Id	Request Date	Requestor	Document
115	2003-03-27 11:45:16	SMITHA_S	INTERNAL_COMMUNICATION
116	2003-03-27 11:52:44	FRANKLIN_JOSEPH	INTERNAL_COMMUNICATION

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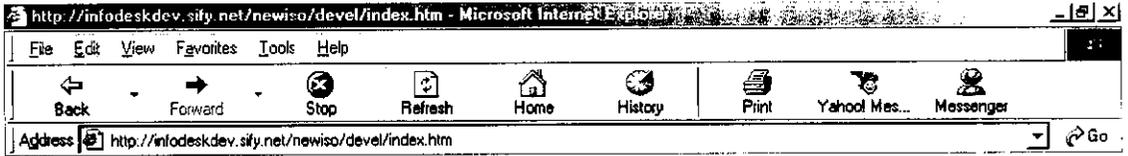Address 🔲 http://infodeskdev.sify.net/newiso/devel/index.htm ▼ 𝒫 Go

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Document Change Request Form

Request Date	2003-03-27 11:45:16	Document	INTERNAL_COMMUNICATION
Initiator	SMITHA_S	Activity	NEW REQUEST
Unit Name	SIFYASE	Unit Head	RAJASEKAR_G

⊙ Approve   ○ Reject   View document

Reason for change

To define a new communication process for SIFYASE

Reason for rejection

Submit

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Document Change Request Form

Request Id	Request Date	Requestor	Unit head	Unit name	Document
116	2003-03-27 11:52:44	FRANKLIN_JOSEPH	SREENIVASAN_S	SIFYIOE	INTERNAL_COMMUNICATION
115	2003-03-27 11:45:16	SMITHA_S	SREENIVASAN_S	SIFYASE	INTERNAL_COMMUNICATION
106	2003-01-31 13:13:53	SREENIVASAN_S	RAJASEKAR_G	SIFYHDE	QUALIFIED PERSONAL

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http://infodeskdev.sify.net/newiso/devel/

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Document Change Request Form

Request Date	2003-03-27 11:52:44	**Document**	INTERNAL_COMMUNICATION
Initiator	FRANKLIN_JOSEPH	**Activity**	NEW REQUEST
Unit name	SIFYIOE	**Distributed**	⊙ Yes ○ No
Unit Head	SREENIVASAN_S	**Incorporated**	⊙ Yes ○ No
⊙ **Approve**	○ **Reject**		View document

Reason for change

To Define rules for the setting up of IP Management

Reason for rejection

Submit

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Document Change Request Form - View Request

Req Id	Req Date	Initiator	Status	Document	Activity
102	31/01/2003	BADRI_NARAYANAN	MR Approved	QUALITY_PLAN	NEW REQUEST
101	31/01/2003	BADRI_NARAYANAN	MR Approved	PROCESS	NEW REQUEST
100	31/01/2003	BADRI_NARAYANAN	MR Approved	QUALITY_PLAN	NEW REQUEST
98	30/01/2003	BADRI_NARAYANAN	Rejected	QUALITY_PLAN	MODIFY REQUEST
64	26/01/2003	THOMPSON_PAUL	MR Approved	QUALIFIED PERSONAL	MODIFY REQUEST

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8.2 Abbreviations

ISO – International Standards Organization

SIFYCTO – Chief Technology Officer, Sify

SIFYMR – Management Representative, Sify

PHP – Personal Home Page: Hypertext Preprocessor

LAMP –Linux, Apache, MySQL and PHP

DCRF –Document Change Request Form